**Monocots and dicots**

There are 2 basic types of plants...monocots and dicots. Each group displays differences in leaves, stems, roots, flowers, and seeds. In this investigation, your team is going to germinate and grow 2 different plants. One is a monocot and the other is a dicot. You will observe the seed, root and leaf differences between the 2 different plants. The stem differences will be analyzed through microscopic study of preserved stem tissue. In addition, you will also research other differences between monocots and dicots. As you differentiate between the 2 groups, think about the trees that you studied. Would they be classified as monocots or dicots?  
  
Activity:  
1. Problem: How do monocots and dicots differ in their seed, leaf, root, stem and flower structure?  
2. Materials:  
2 styrofoam cups per team  
potting soil  
lima beans  
rye seeds  
water  
3. Procedure:

* Write the names of the seeds and your group name on the outside of the cup. Fill 3 cups 3/4ths full of potting soil.
* Place 4 rye seeds or alfalfa seeds that have been soaked in water for 2 days on top the soil in one cup
* Place 2 lima beans that have also been soaked in water for two days on top the soil in the other cup
* Place approximately 1/2 inch of soil on top the seeds. Add water to the soil.
* Place the cups on the window sill and observe daily for several days. Add water to the cups if they become dry.

4. Experimental Data:

|  |  |  |  |
| --- | --- | --- | --- |
| pictures and information about: | Lima Bean | Rye | Alfalfa |
| seeds |  |  |  |
| leaves |  |  |  |
| roots |  |  |  |

5. Conclusion:   
  
The following is what you are going to have to put on your team wiki page under the heading: Monocots and Dicots. \*Divide the work and be sure to check on the work of others to be sure you agree. All must be familiar with the information. Each team member is responsible for putting up their own information. I will be checking the team history to determine which member completed certain information.  
  
Required parts and headings you should use (don't use heading 1 except at the start of this section which you will label Monocots and Dicots):

1. **Research**: Research to determine the differences between monocots and dicots. Construct a chart and show differences between seeds, leaves, roots, flowers, and stems of monocots and dicots.
2. **Experimental data**: Create a chart like the one in experimental data above. Complete the data chart, analyze the data collected and finish with a conclusion statement and reasoning for your conclusion. (Give reasoning for your conclusion). Include in your chart a column for pictures of seeds, leaves, roots, stems, and flowers of the rye, alfalfa and lima bean. You should get the leaf and root pictures from the plants that were grown in class. The stem pictures we will get in the next step. The flower pictures will be taken from the web.
3. **Stem slides**: Examine a monocot and a dicot microscope slide showing a cross section of the stem. Take pictures of each slide using the motic camera (directions are found [here](http://globalbiology.wikispaces.com/programhelp" \l "toc4" \t "_blank). Insert the images into the wiki page (remember to name the pictures uniquely to prevent overwriting by others.) Label the pictures with the structures seen and discuss the differences that you observe. Ask yourself: What are you looking at? and What do each of the parts do for the plant?
4. **Herbaceous plants**: Research and list 3-4 examples of herbaceous plants that are monocots and 3-4 herbaceous plants that are dicots.
5. **Woody plants**: Research and list 3-4 examples of trees that are monocots and 3-4 examples of trees that are dicots.(Perhaps a chart would be a way of organizing this information)
6. **Food and fiber**: Identify how those plants from #4-5 are part of our food and fiber system (how plant species directly or indirectly support our populations in the food or other materials we require). Some of the plants classified in the herbaceous monocot family are actually things we eat. The onions and chives are some of the plants we found. The trees that were classified give us oxygen.